

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Atty. Docket

ALPHONS A.M.L. BRUEKERS ET AL.

NL 010532

Serial No.

Group Art Unit

Filed: CONCURRENTLY

Ex.

Title: ROBUST CHECKSUMS

Commissioner for Patents  
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

Prior to calculation of the filing fee and examination, please  
amend the above-identified application as follows:

IN THE CLAIMS

Please amend claims 3-7, 11, 12 and 19 as follows:

1 3. (Amended) A method as claimed in claim 1, further comprising  
2 the steps of:  
3 - encoding the input signal into an encoded signal; and  
4 - transmitting the encoded signal and the first robust  
5 feature.

1 4. (Amended) A method as claimed in claim 1, further comprising  
2 the steps of:  
3 - receiving an encoded signal;  
4 - decoding said encoded signal into an output signal.

1 5. (Amended) A method as claimed in claim 3, further comprising  
2 the step of embedding the first robust feature into the encoded  
3 signal through watermark technology.

1 6. (Amended) A method as claimed in claim 1, characterized in  
2 that for each of said input and output signals, a robust feature is  
3 derived by:

- 4 - splitting an information signal in successive time  
5 intervals; and
- 6 - computing a hash value from a scalar property or vector  
7 of properties of the information signal within each time interval.

1 7. (Amended) A method as claimed in claim 1, characterized in  
2 that in each of said time intervals, a hash value is computed by

- 3 - transforming the information signal within the time  
4 interval into disjoint bands;
- 5 - calculating a property of the signal in each of said  
6 bands;
- 7 - comparing the properties in the bands with respective  
8 thresholds; and
- 9 - representing the results of said comparisons by  
10 respective bits of the hash (sample) value.

1 11. (Amended) A method as claimed in claim 1, characterized in  
2 that the transformation is a lossy transformation.

- 1 12. (Amended) A method as claimed in claim 1, characterized in  
2 that the method further comprises the steps of:
- 3 a) calculating from the input signal a first block of  
4 subsequent hash values corresponding to a first time interval;
  - 5 b) calculating from the output signal a second block of  
6 subsequent hash values corresponding to a second time interval, at  
7 least partially overlapping said first interval;
  - 8 c) selecting one hash value from one of said first and  
9 second blocks of hash values;

10 d) searching for said hash value in the other one of said  
11 first and second blocks of hash values;  
12 e) calculating a difference between the first and second  
13 blocks of hash values in which the hash value found in step (d) has  
14 the same position as the selected hash value in the other one of  
15 said first and second blocks;  
16 f) repeating steps (c)-(e) for a further selected hash value  
17 until said difference is lower than a predetermined threshold or  
18 until the number of hash values to be selected is lower than a  
19 predetermined threshold;  
20 g) concluding to a correct operation of said signal  
21 transformation if the difference is lower than a predetermined  
22 threshold or concluding to a false operation of said signal  
23 transformation if the number of hash values to be selected is lower  
24 than a predetermined threshold.

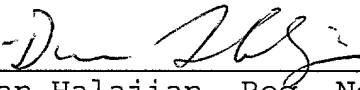
1 19. (Amended) A receiver according to claim 17, characterized in  
2 that the receiver further comprises  
3 - receiving means for receiving an encoded signal from a  
4 transmitter,  
5 - decoding means for transforming the encoded signal into  
6 the output signal.

REMARKS

The foregoing amendment to claims 3-7, 11, 12 and 19 were made solely to avoid filing the claims in the multiple dependent form so as to avoid the additional filing fee.

The claims were not amended in order to address issues of patentability and Applicant respectfully reserves all rights under the Doctrine of Equivalents. Applicant furthermore reserves the right to reintroduce subject matter deleted herein at a later time during the prosecution of this application or continuing applications.

Respectfully submitted,

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## Appendix A

### Version with Markings to Show Changes Made to the Claims

The following are marked up versions of amended claims 3-7,  
11, 12 and 19:

1 3. (Amended) A method as claimed in claim ~~1 or 2~~, further  
2 comprising the steps of:  
3 - encoding the input signal into an encoded signal; and  
4 - transmitting the encoded signal and the first robust  
5 feature.

1 4. (Amended) A method as claimed in ~~any of the preceding claims~~  
2 1, further comprising the steps of:  
3 - receiving an encoded signal;  
4 - decoding said encoded signal into an output signal.

1 5. (Amended) A method as claimed in claim ~~3 or 4~~, further  
2 comprising the step of embedding the first robust feature into the  
3 encoded signal through watermark technology.

1 6. (Amended) A method as claimed in ~~any of the preceding claims~~  
2 1, characterized in that for each of said input and output signals,  
3 a robust feature is derived by:  
4 - splitting an information signal in successive time  
5 intervals; and  
6 - computing a hash value from a scalar property or vector  
7 of properties of the information signal within each time interval.

1 7. (Amended) A method as claimed in ~~any of the preceding claims~~  
2 1, characterized in that in each of said time intervals, a hash  
3 value is computed by

4 - transforming the information signal within the time  
5 interval into disjoint bands;  
6 - calculating a property of the signal in each of said  
7 bands;  
8 - comparing the properties in the bands with respective  
9 thresholds; and  
10 - representing the results of said comparisons by  
11 respective bits of the hash (sample) value.

1 11. (Amended) A method as claimed in ~~any of the preceding claims~~  
2 1, characterized in that the transformation is a lossy  
3 transformation.

1 12. (Amended) A method as claimed in ~~any of the preceding claims~~  
2 1, characterized in that the method further comprises the steps of:  
3 a) calculating from the input signal a first block of  
4 subsequent hash values corresponding to a first time interval;  
5 b) calculating from the output signal a second block of  
6 subsequent hash values corresponding to a second time interval, at  
7 least partially overlapping said first interval;  
8 c) selecting one hash value from one of said first and  
9 second blocks of hash values;  
10 d) searching for said hash value in the other one of said  
11 first and second blocks of hash values;  
12 e) calculating a difference between the first and second  
13 blocks of hash values in which the hash value found in step (d) has  
14 the same position as the selected hash value in the other one of  
15 said first and second blocks;  
16 f) repeating steps (c)-(e) for a further selected hash value  
17 until said difference is lower than a predetermined threshold or  
18 until the number of hash values to be selected is lower than a  
19 predetermined threshold;

20 g) concluding to a correct operation of said signal  
21 transformation if the difference is lower than a predetermined  
22 threshold or concluding to a false operation of said signal  
23 transformation if the number of hash values to be selected is lower  
24 than a predetermined threshold.

1 19. (Amended) A receiver according to claim 17 ~~or 18~~,  
2 characterized in that the receiver further comprises  
3 - receiving means for receiving an encoded signal from a  
4 transmitter,  
5 - decoding means for transforming the encoded signal into  
6 the output signal.

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